



Integrator's Guide **borrego+™**



HD Component Video / Composite Video /
Analog Audio Preamp Matrix Switch

FCC Notice

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver. —
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

Table of Contents

Table of Contents	3
Introduction.....	5
Installation.....	6
Unpacking.....	6
Inputs	6
Outputs.....	7
RS-232 Serial	7
USB Serial.....	7
Rear Panel IR	7
Power.....	8
Rack Mounting.....	8
Operation.....	8
Front Panel Control.....	8
IR Remote Control.....	9
Matrix status	10
Setup Menu	10
Using the IR remote or Front Panel	10
Setup Options	11
Memory Function	12
Tone and Volume Control	13
Discrete IR Codes	13
Restoring to Factory Defaults	14
Serial Protocol	15
Serial Port Settings	15
Common Structures and Syntax	15
Maximum Response Time.....	15
Group Commands	16
Response to Commands	16
Errors.....	16

Switching Protocol 17
 Command Types 17
 Input 17
 Volume/Bass/Treble Value 18
 Output..... 18
 Time (Optional Field)..... 18
 Volume Only Commands 19
Serial Control Examples..... 19
Memory Protocol..... 20
Setup Protocol 22
Power Control 23
Query Commands 23
USB Driver Installation..... 24
 USB COM Port Settings 32
 Uninstalling the USB drivers..... 33
Care and Maintenance..... 33
Specifications 34
 Performance 34
 Power..... 34
 Physical 34
2 Year Warranty 35

Introduction

Congratulations on your selection of the Borrego+ audio/video matrix switch. The Borrego family of matrix switches feature component video and digital audio in an 8x8 configuration.

Features

- 8 inputs of component video (YPbPr), composite video and analog audio. The composite video section can also be used for SPDIF digital audio
- Volume, Bass and Treble control for Analog Audio outputs
- 16 memory locations to store switch configurations and volume/bass/treble levels
- Variable duration volume fade up/down and muting
- Discrete IR codes for volume and mute for each output
- High bandwidth video section (140 MHz) for 1080p
- Independent routing of all signal types
- Attractive enclosure featuring brushed aluminum and high gloss acrylic front, with black top cover
- Universal AC input power, 90-240VAC 50/60Hz with standard IEC320 receptacle
- All gold plated RCA connectors ensure a long life without corroded connectors
- Ability to add more features in the future via a firmware update.

Installation

The Borrego+ Matrix Switch has small cooling vents on the side that must not be covered, but it can have other equipment such as amplifiers stacked on top of it. The Borrego is also equipped with removable padded feet so it may be stacked on top of other equipment without causing damage.

Unpacking

The Borrego+ ships with the following:

- 1 – Borrego Matrix Switch
- 1 – AC Power cord
- 1 – 6' USB cable
- 1 – 6' RS-232 cable
- 1 – User's Guide
- 1 – CD-ROM driver disc
- 1 – Pair of rack mount ears with screws

A Neopro IR remote control (if purchased as an accessory).

There is a clear film to protect the front panel. To ensure proper touch panel response, remove this film before using the Borrego+.

Inputs

Connecting source devices to the Borrego can be done in any order, but make sure to connect the video “Y”, “Pb” and “Pr” signals as labeled on the rear panel.

The connectors labeled “Video” are used for composite standard definition video, or SPDIF digital audio. They can also be used for both signal types simultaneously, as long as care is taken not to route a signal of one type to an output of a different type.

The analog audio stereo matrix is labeled “L” and “R”.

Outputs

Having a true matrix switch allows you to treat each output as a ‘zone’. For example, Output 1 can be the home theater zone, and output 2 can be the master bedroom zone. In this case you would run a set of component video cables plus audio cables to each zone. The maximum length of cable to each zone will vary on the quality of the cable used. High quality quad-shielded RG6 cables can support zones 300 feet away.

RS-232 Serial

The serial port on the rear panel is labeled “RS-232”. *It is wired as a DCE device, and should be connected to a PC RS-232 port with a straight through cable.* Connection to most (most?) control systems should be with a straight through type serial cable, such as the cable provided with the matrix switch.

For the command protocols, see the Serial Protocols section.

USB Serial

To use the USB communication feature of the Borrego, connect the USB cable to the PC’s USB port (flat end), and the other end (square end) to the Borrego matrix switch. See the Serial Protocol and USB Driver Installation sections of this manual.

Rear Panel IR

The rear panel IR connector is used for direct connection to an IR control system. It is a 3.5mm 2 conductor jack, and accepts unmodulated IR. It is polarity insensitive, however normally the ‘tip’ is the active signal, and the ‘sleeve’ is the ground.

Note: Some IR repeater systems are designed to work only with their own IR blasters, and a common “workaround” is to cut these blaster cables and add a 3.5mm plug on the end. In some cases this will work fine, however some repeater systems will have noise that prevents signals from being decoded.

Power

Once all the input and output connectors are installed, connect the supplied power cable to the AC input. If you are not in North America, you may use your own standard IEC320 power cable with the Borrego matrix switch. The power supply input is auto-ranging from 90 to 240 Vac.

Rack Mounting

To prevent shipping damage the product ships with the rack mount ears detached from the unit. The bottom of the unit has protective feet with soft, non-scratching pads, so it may be used in a stand-alone mode, without scratching shelves or equipment it is placed on top of.

In the rackmount configuration, the chassis is 2 rack units high after the bottom feet are removed. Removal of the feet requires a Philips screwdriver.. Use the supplied screws to attach the rack ears.

Operation

Overview

The Borrego+ matrix can be thought of as three matrix switches in one box: 1) A component video matrix, 2) a standard definition composite video matrix, and 3) an L/R analog audio matrix. By default they are controlled together, but by using the audio and video commands mentioned below, they can be controlled separately.

Front Panel Control

The matrix switch front panel uses NeoTouch™ technology. The NeoTouch™ panel senses a human finger touching the acrylic panel without any moving parts. When pressed, the button will be illuminated. A single touch of the power button turns the unit on.

To prevent accidental power down, two button presses are required to shut down the matrix (standby mode).

When powered on, three buttons are enabled to start a switching command: **In, Audio, and Video**. Control via the front panel is a four-button sequence:

1. (In/Audio/Video)

In – Switches both audio and video

Audio – Switches the Audio matrix only

Video – Switches both the component and composite video

2. (Number)*, To select the source input.

3. (Out)

4. (Number)* To select the output or zone

*The panel will not allow you to select inputs or outputs that do not exist (i.e. “9”).

There are two features that use 0 for the (Number) entry:

Disabling an Output

Selecting Input 0 will disable the output that is selected.

Example: **In, 0, Out, 5** will disable audio and video in zone 5.

Party Mode

Selecting Output 0 will route the selected input to all outputs. Example:

In, 3, Out, 0 routes input 3 to all 8 outputs.

IR Remote Control

The command sequence for controlling the matrix switch signal routing from an IR remote control is similar to front panel sequences, except the composite and component video can be addressed separately (the front panel has only one “Video” button). See the previous section “Controlling from the front panel” for details.

IR Control Sequence

(Video1), (#), (Out), (#) – Controls YPbPr matrix

(Video2), (#), (Out), (#) – Controls composite video matrix

(Audio1), (#), (Out), (#) – Controls analog audio matrix

Matrix status

To view the connection status of the matrix, use the IR remote left and right arrow keys. Each screen will show the current status of one output (see figure 1). The first line of the display is the output number, and the second line lists the inputs that are currently connected to that output. In some cases, the input numbers may be different, indicating that audio and video have been switched separately. To view another output status, use the left and right arrow keys to as needed.

At any time the user may press EXIT to return to the home screen, or wait 10 seconds and the home screen will return on its own.

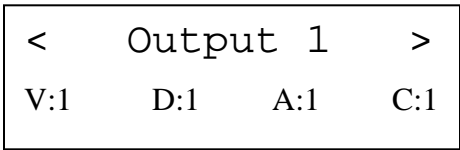


Figure 1
V: Component Video
D: Digital Audio
A: Analog Audio
C: Composite Video

Setup Menu

The user setup menu is accessible using the Neopro IR remote,the front panel, or serial ports (refer to the Serial Protocols section for details).

Using the IR remote or Front Panel

Press “**Setup**” to open the menu.

Use the “**Left**” and “**Right**” arrow buttons to navigate through the different options (see below for details) and the “**Up**” and “**Down**” arrow buttons to change any of the optional settings.

Use the “**Left**” or “**Right**” arrow to save the changes and proceed to the next setup option.

To quit the Setup menu, there are two options:

Pressing “**Select**” saves the changes.

Pressing “**Exit**” *discards the changes made to the current option.*

The Setup Menu also auto-exits after being idle for 30 seconds.

Setup Options

SET: Panel LED

This option controls all the front panel LEDs.
The default is ON.

SET: Disp Lamp

Sets the display brightness to one of four levels. The default is 100% (full brightness).

SET: AC PowerUp

This option controls what the matrix will do when AC power is first applied, and how it recovers from a power outage. Selecting “ON” (default) will force the unit to turn on, and the previous switch state will be restored. Selecting “STANDBY” will cause the unit to enter standby mode when AC power is applied.

SET: Touchpanel

This option enables or disables the front panel buttons.
The default is “ON” (enabled).

SET: Touchsense

This controls the sensitivity of the front panel buttons.
Default is “HIGH” and this makes the front panel respond faster. A lower setting reduces the risk for accidental button pushes or false triggers by outside interference.

SET: Front IR

This option enables or disables the front panel IR sensor. Set to OFF to prevent spurious IR signals from controlling the matrix.
The default for the front IR is “ON (enabled).

SET: Verbosity

Memory commands and mute commands will always echo serial responses, regardless of this setting.

The default for this option is ON, where the matrix echoes responses to any command (via RS-232, IR, or front panel). When set to OFF, the matrix only echoes responses to RS-232 commands.

Volume Presets and Preamp

The range for all bass, treble and volume levels is “00” to “99”. The matrix switch is shipped with default volume set to 25%, and bass and treble set to 50%.

If you are not going to use the preamp function of your matrix switch, set the audio preamp for a flat audio response (the output level will match the input level). Set the volume to “99” and bass and treble to “50” (bass and treble “neutral”—no boost or cut).

?>>If any of the output volumes were changed (i.e. not anymore at max), you can activate this option again. The “**Use Current**” option will not change any of the volume settings.

Memory Function

The matrix switch has 16 available memory slots (1-16). Each memory slot can store the state of the switch and is editable using the serial protocol. Storing and recalling to and from a memory slot is done easily using the IR remote.

Shortcuts: “#” may be 1 or 2 digits depending on the slot no. Leading zeroes are not required for slots 1-9.

(Stop), (#) – Store current switch state to memory slot #

(Play), (#) – Recall memory slot # and overwrites current switch state

Memory view and edit can only be done via the serial port. You can make a backup of all memory slots by using memory view and save them in a text file. Please refer to the Serial Protocol section of this manual.

Tone and Volume Control

Tone and volume control can be accessed through the front panel, IR remote, or serial (see Serial Protocol section in this manual).

Press **“VOL+TONE”** button from the front panel or **“INFO”** button on the IR remote to access the tone and volume control menu.

Use the **“LEFT”** and **“RIGHT”** arrows to change output numbers.

Use the **“UP”** and **“DOWN”** arrows to increase or decrease value. For bass and treble, 50 is used for a “flat” frequency response. Maximum is 99 and minimum is 00.

Press **“SELECT”** to switch between Volume, Bass, or Treble.

Quit (via front panel) by pressing **“VOL+TONE”** button or powering the unit down. To quit with the IR remote, press the **“EXIT”** button.

Discrete IR Codes

You may download the discrete IR codes from our website:

<http://www.neoprointegrator.com>.

The codes come in multiple formats.

Restoring to Factory Defaults

If you accidentally disable the front panel or IR input via the USB or RS-232 port, you may restore those features without using the ports again. The factory defaults may be restored using the steps below.

CAUTION!

Restoring to factory defaults wipes out all switch settings, volume and tone settings, setups, and memory slots. Make sure you have a backup of these. Use the query commands (see Serial Protocol section in this manual) and save the responses in a text file.

To restore the Borrego+ matrix switch back to factory defaults:

- Place the Borrego+ in standby mode by pressing the power button.
- On the front panel, slowly press 0, 0, 7.

The unit will then enter Initialization, and when complete, return to “ON” mode. The front panel and IR will work normally.

Serial Protocol

Commands

Commands are structured so that a control program has two-way communication with the matrix. The control system can confirm and store the state of the matrix switch. These commands are also human readable ASCII text, which will help in troubleshooting and testing.

The matrix may also be controlled with one way serial communications.

Some models have the ability to switch audio and video separately. For these switches, the matrix looks like several independent switches. These “levels” are also called Command Types.

Serial Port Settings

115.2 kilobaud, no parity, 8 data, 1 stop.

Common Structures and Syntax

Commands are not case sensitive. Upper and lower case characters are used in this manual, but have the same effect. Numbers are 1 or 2 digits, (leading zeroes not required). Spaces are not permitted within the square braces—they will generate an error (see Error section).

A command is always wrapped in square braces:

```
[ command ]
```

It is not necessary to follow the command by any carriage returns or other special characters. The closing brace will trigger the switch to process the command. Within a command or response, there will be one or more fields, separated by commas:

```
[ BV , 1 , 2 ]
```

Maximum Response Time

Delays are not required between individual commands or group commands for sending up to 32 commands at a time to the matrix switch. For more than 32 commands, wait 500ms before sending.

One Way Serial Hints

Any of the examples shown in this guide can be sent to the matrix at anytime without concern as to the state of the matrix. If you need to send a string of commands, put them in a **Group Command**.

Group Commands

A group command is always wrapped in curly brackets:

```
{ [command1] [command2] [command3] }
```

Group commands are used if the user wants to see one response per command mode inside the group brackets. So if there are two volume commands in one group bracket, there will only be one volume response.

Example:

Group commands are also used for memory edit function, this will be discussed later.

Response to Commands

The serial port *does not* echo characters sent.

When a command is sent, the matrix switch response will be in curly brackets, like in a group command. That way, any response from the switch can be used as a command back to it. The contents depend on the type of command and the model. When signal paths are switched, code indicating the status of the entire matrix is returned. Refer to the “Query commands” section for the specific matrix switch model for more details.

Errors

Any command with a syntax error will result in a response of

```
[ E ]
```

The switch will only attempt to process a command between matching [] braces, so any characters before and after the braces is thrown discarded. If invalid characters are between the braces, they will be processed, and the switch will echo the bad command and return an error.

Switching Protocol

Switching commands use this structure

[m c , i , o , t]

m is the first letter of the model name (e.g. “b” for Borrego)

c is the Command Type (see below)

i is the Input number or Volume/Bass/Treble Level

o is the Output number

t is the Time (optional for delays, fades, etc.)

Command Types

X to switch All A/V Signals

V to switch High Definition Video (YPbPr)

D to switch Digital Audio (SPDIF)

A to switch Analog Audio (L/R stereo)

C to switch Composite Video

L to Set Volume Level

B to Set Bass Level

T to Set Treble Level

Note: Some matrix switch models do not have all these levels enabled and will display the error [E] response when such a command is received.

Example: The Delano (video only matrix), has one level, HD Video. So **D A C L B T** are not valid command types, and will generate errors.

Input

Source input range is from 0 to maximum number of inputs. Please refer to the user manual to determine maximum number of inputs and outputs. This may be one or two digits--no leading zeros required. Selecting Input 0 will disable the selected output zone

Volume/Bass/Treble Value

Valid values ranges from 0 to 99 (max.). “Flat response” settings are:

Volume = 99 (no gain from input to output)

Bass, Treble = 50. Greater than 50 boosts and less than 50 attenuates the respective tone.

Output

Output zone range is from 0 to maximum number of outputs.

Output ‘0’ sends the selected input to all output zones (Party Mode).

Time (Optional Field)

The time parameter is used to smooth transitions between volume levels.

It may be used to minimize “pop” or sudden noises when switching audio sources.

The format for commands using the time parameter is:

```
[mc,i,o]
```

where:

m is the first letter of the model name

c is the Command Type.

i is the Input number.

o is the Time (0 to 10 seconds for transition).

For a switch command, time is split for ramping down and ramping back up. So for a time 10, 5 seconds is spent ramping the volume to 0, then switching occurs and the level ramps to the current level over 5 seconds. For lower volumes, the matrix switch will not wait for the time to expire, which means switching can happen faster once the target volume is reached.

Some command types do not fade in or out of the time field.

V (YPbPr video), **C** (composite video), **D** (digital audio) will perform the switch at the middle of the time interval, so for a time setting of 8, the video will switch at 4 seconds without any fade-in or out.

B (bass) and **T** (treble) will not be affected by time settings, and no error will be generated.

Volume Only Commands

These commands only affect audio:

x is the first letter of the model name (e.g. “b” for Borrego)

n is the Output number

[xL,M0,n] – Absolute mute output *n* (absolute = 0)

[xL,MP,n] – Partial mute output *n*

[xL,U,n] – Volume UP output *n*

[xL,D,n] – Volume DOWN output *n*

Serial Control Examples

```
[BV,1,2]
```

Borrego matrix: Routes HD Video input 1 to output 2

```
[GX,0,0,3]
```

Gillespie: Disable all outputs in 3 seconds.

```
{[EL,99,1][eb,99,1][et,99,1]}
```

Eureka : (Group) Set volume, bass, and treble to 99 for output 1.

```
[CL,M0,0]
```

Concord : (Group) Mute (absolute) all outputs.

Memory Protocol

Memory functions enable the user to store, recall, view, and edit switch configurations. There are **16 memory slots available**.

The Memory Command structure begins with “M”:

[M,x,n]

x	n (memory location)	Function
S	1-16	Store current state to memory location <i>n</i>
R	1-16	Recall memory location <i>n</i>
V	1-16	View memory location <i>n</i> via serial
C	1-16	Clear memory location <i>n</i>
E	1-16	Edit memory location <i>n</i>

Memory function stores volume, bass, and treble values, and all input-output combinations in the matrix switch. . Fading time cannot be stored in memory using [M,S,n]. Instead, user can use memory edit function to store the time field.

Example: If you want to have a paging setup to save the current configuration, switch all outputs to input 1, set all volumes to 99, and then restore the saved configuration once the paging is done the macro of commands is:

```
[M,S,1]
{[BA,1,0][BL,99,0]}
...do your paging...
[M,R,1]
```

Memory Edit

Memory edit allows the user to modify the current stored memory from any memory location. To do this, invoke the memory edit function [M,E,n], then send switch commands using the group brackets. These commands will be stored in the memory location, but will not be executed

These commands must be inside a pair of curly brackets:

{ [][][][] ... }

They can have a time field and will be stored in memory. *Any error command inside a group bracket while memory edit command is active will be ignored.*

Succeeding commands after the end bracket '}' will be treated as normal commands. If no opening bracket is detected right after memory edit was invoked, and another command was detected (valid or not), it will be ignored and the program will exit memory edit function without saving anything to that memory location. The Memory edit function only accepts switch commands.

Setup Protocol

Command structure prototype begins with “S”:

[S,x,n]

x	n	Output
L	0	Led OFF
L	1	Led ON
R	0	IR OFF
R	1	IR ON
B	0	Front Panel Buttons OFF
B	1	Front Panel Buttons ON
V	0	Verbosity OFF
V	1	Verbosity ON
D	25	Display Brightness 25%
D	50	Display Brightness 50%
D	75	Display Brightness 75%
D	100	Display Brightness 100%
S	L	Front Panel Sensitivity LOW
S	M	Front Panel Sensitivity MEDIUM
S	H	Front Panel Sensitivity HIGH
A	0	On Power Up – STANDBY
A	1	On Power Up – ON

Power Control

To Power ON use:

[P,1]

For Power OFF use:

[P,0]

Query Commands

Query commands begin with “?” and return current states. Responses are enclosed in curly brackets. They can be re-used as input back to the matrix switch. Queries only respond to valid command types and levels.

Example: For the Delano matrix, [?DA] is invalid. because it does not have an Analog Audio (A) command type or switch level. The query for all levels, [?D] or [?DX] will only return HD Video (V) responses.

x = model letter

[?S] – Setup

[?P] – Power

[?V] – Version

[?x] – All levels Switch State (X, V, D, A, C)

[?x0] – All levels Switch State (X, V, D, A, C)

[?xX] – All levels Switch State (X, V, D, A, C)

[?xV] – HD Video Switch State (V)

[?xD] – Digital Audio Switch State (D)

[?xA] – Analog Audio Switch State (A)

[?xC] – Composite Video Switch State (C)

[?xL] – Volume (L)

[?xB] – Bass (B)

[?xT] – Treble (T)

Model Specific Queries

For Avalon, Borrego, Concord only:

[?x1] – HD Video Switch State (V)

[?x2] – Avalon = Digital Audio Switch State (D)

[?x2] – Borrego/Concord = Analog Audio Switch State (A)

For Borrego and Concord only:

[?x3] – Composite Video Switch State (C)

USB Driver Installation

When using the USB port, the matrix switch will be installed as a virtual COM port. This means that any control program capable of controlling a device through a normal serial port should be able to control the matrix through a USB port.

This driver set is for all versions of MS Windows. Linux and Mac drivers can be made available upon request.

The following steps are for Windows XP, but other versions of Windows are similar.

Step 1 – Connect the USB cable to the matrix and controlling computer.



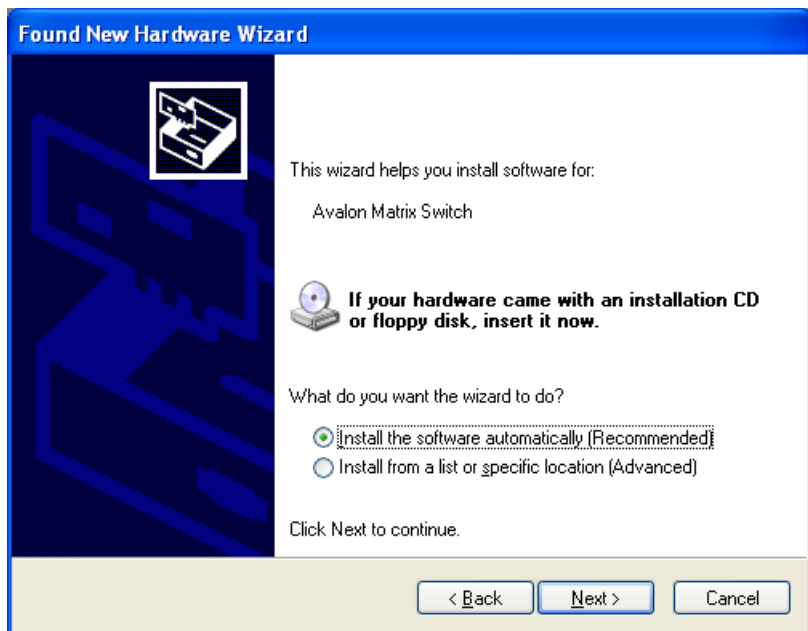
Windows will detect the new hardware, and launch the plug and play wizard.

Step 2 – Found New Hardware Wizard



The first window will attempt to use the internet to find the driver, Select **“No, not at this time”**, and click **Next**.

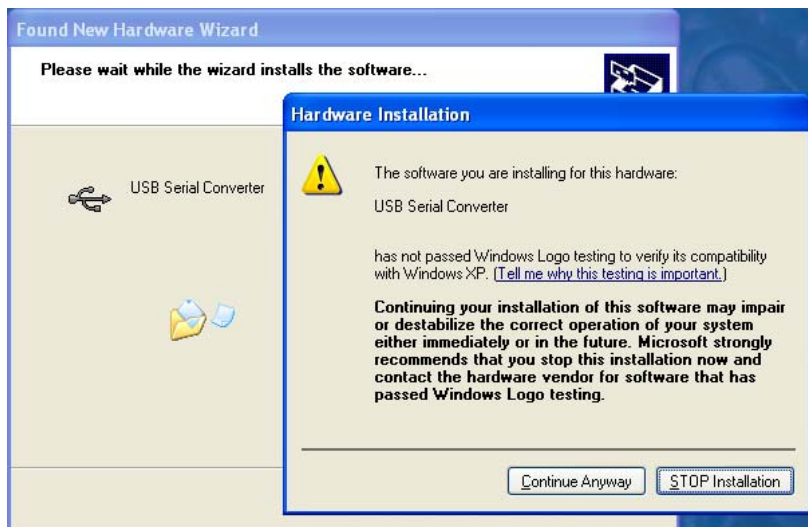
Step 3 – Driver location



The next window attempts to find the driver disc. Insert the driver CD disc in the your CD-ROM drive if you haven't already.

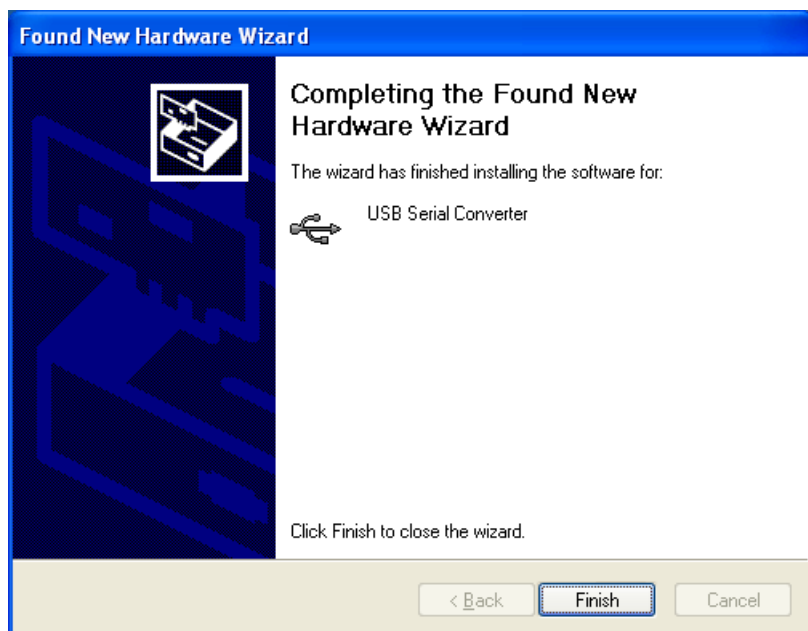
Leave the button labeled "Install the software automatically (recommended)" selected, and click Next.

Step 4 – Continue Anyway



Windows will prompt on logo testing. Click “**Continue Anyway**”

Step 5 – Completion of first half



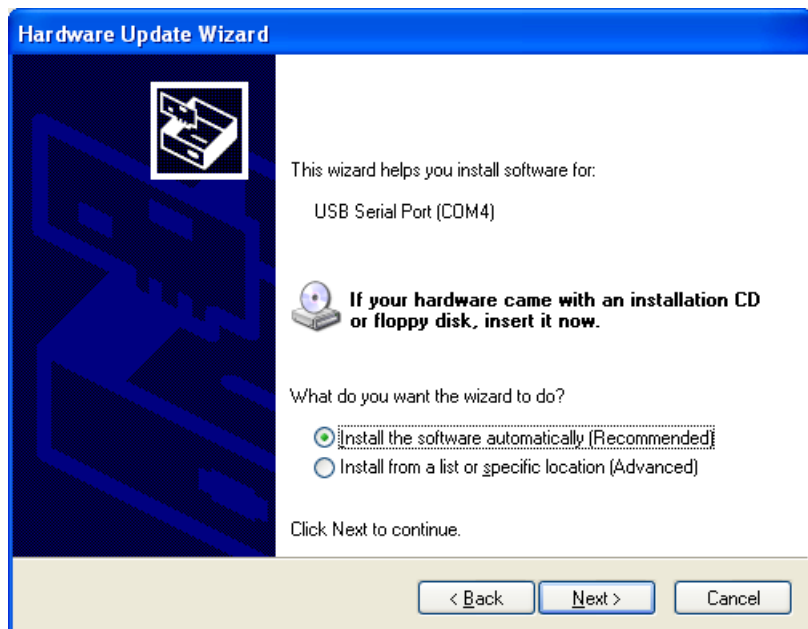
Click **“Finish”**.

Step 6 – Installing virtual COM port driver



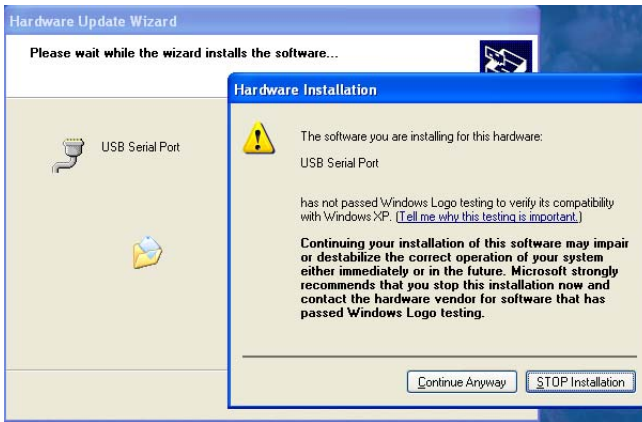
Windows will again start the new hardware wizard to install the virtual COM port driver. Click **“No, not this time”**, then click **Next**.

Step 7 – Finding the driver



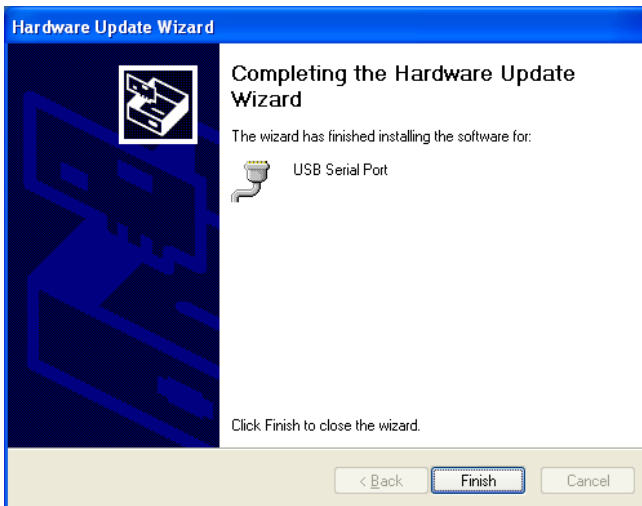
Leave the button labeled “Install the software automatically (recommended)” selected, and click Next.

Step 8 – Continue Anyway



Windows will prompt on logo testing. Click “**Continue Anyway**”

Step 9 – Completing the Hardware Update Wizard

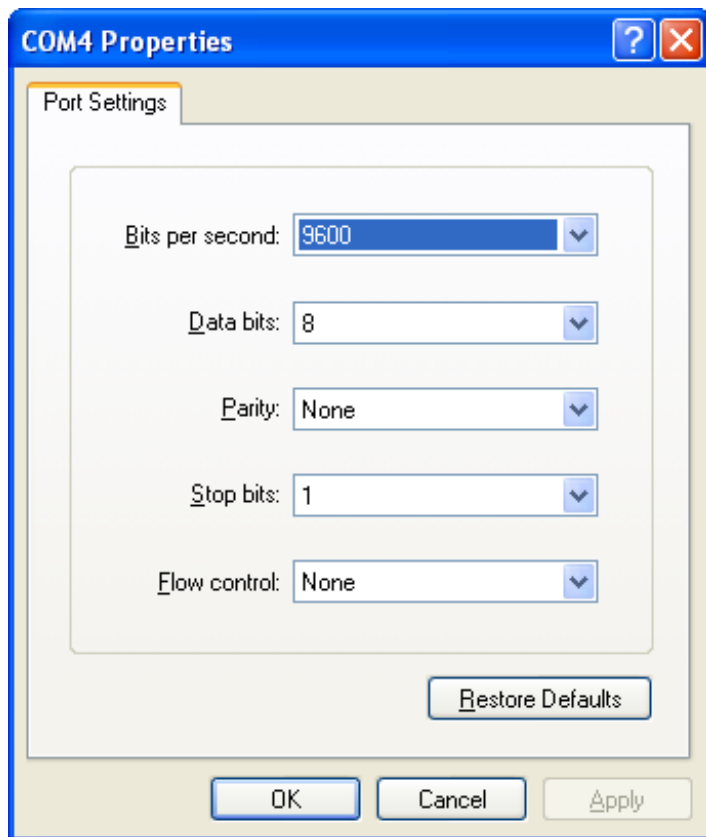


This is the final step, click **Finish**

At this point, the drivers are installed properly.

USB COM Port Settings

Whether using a Windows terminal program such as Hyperterminal, a control application, or a dedicated control system, the baud rate settings are the same: 115200 baud, 8 data, no parity, 1 stop, no flow control. The COM port shown in the following example may change depending on your system.



Uninstalling the USB drivers

There is typically no harm in leaving the drivers installed in Windows. It is usually best to keep them installed, so that when the device is plugged back in, it will be recognized automatically and is assigned the same COM port number.

However, if you need to uninstall the drivers for any reason, use the Windows Control panel to do so.

To Uninstall:

Click the **Start** Menu

Select Settings, then Control Panel

Click Add or Remove Programs

Find Matrix Switch USB Drivers

Click Change /Remove

Follow the on screen instructions.

Care and Maintenance

The Borrego+ matrix switch does not require any regular maintenance besides keeping it clean.

Never use harsh cleaners or solvents on the Borrego+ front panel. There are several dusting products for electronics, and standard glass cleaner may be used.

Spray any liquids onto a towel first, then wipe the front of the Borrego+ with the moist towel.

Should the Borrego+ matrix switch fail to operate as expected, please contact NeoPro for service advice. **THERE ARE NO ADJUSTMENTS OR USER SERVICEABLE PARTS INSIDE THE CABINET.**

Specifications

Performance

Component Video

Input coupling	AC
Input impedance/termination	75 ohms
Output coupling	DC
Output impedance	75 ohms source terminated
Output video bandwidth (-3dB)	140 MHz
Crosstalk	Below -80dB
Video modes	480i, 480p, 540i, 540p, 576i, 576p, 720p, 1080i, 1080p
Video vertical rates	24, 25, 29.97, 30, 50, 59.97, 60

Composite Video & Digital Audio

Output video bandwidth (-1dB)	10 MHz
Crosstalk	Below -80dB

Audio (Analog L/R)

Input termination	10K ohms
Audio bandwidth	20-20KHz, +/- 0.5dB
Gain and output type	Variable gain (0% = -100dB, 100% = 0dB), low impedance output

Power

Input voltage	90-240V AC 50-60Hz autosensing
Input power	8W when "On"; 4W in "standby"

Physical

Dim. with feet (removable)	17"W x 3.75"H x 10.75"D
Dim without feet	17"W x 3.55"H x 10.75"D
Weight	8.8 lbs (shipping wt. 13 lbs.)

2 Year Warranty

NeoPro warrants this product against defects in material and workmanship for a period of 2 years. This warranty applies to the original end-user purchaser and installation service provider. NeoPro will, solely at its option, repair or replace this product with a functionally equivalent new or factory-reconditioned product during the warranty period. The consumer should contact the installation service provider that resold the product who will in turn deliver the product to NeoPro. All transportation risks and costs in connection with this warranty service are the responsibility of the consumer.

In order to keep this warranty in effect, the product must have been handled and used as prescribed in the instructions accompanying this warranty. This warranty does not cover any damage due to accident, misuse, abuse, or negligence. Repair or replacement, as provided under this warranty, is your exclusive remedy. NeoPro shall not be liable for any incidental or consequential damages. Implied warranties of merchantability and fitness for a particular purpose on this product are limited to the duration of this warranty.

Some states/countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. Some states/countries do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state and country to country.



© 2010 NeoPro

www.neoprointegrator.com